

WHAT IS CLAIMED:

1. An apparatus for electrocardiogram measurement consisting of, in combination:
 - a first non-conductive pad;
 - a first electrode and a second electrode disposed on said first non-conductive pad and adapted for electrical connection with the skin of a subject in order to receive and transmit electrical impulses, wherein said first electrode represents any one of V₄, V₅, or V₆ and the second electrode is either (i) positioned on the subject below the first electrode in order to represent left leg (LL) or (ii) is placed on a line on the subject defined by the V₄, V₅, and V₆ precordial positions in order to represent any one of V₄, V₅, or V₆ not represented by the first electrode;
 - a second non-conductive pad;
 - a third electrode disposed on said second non-conductive pad and adapted for electrical connection with the skin in order to receive and transmit electrical impulses, wherein said third electrode is a right arm (RA) electrode that is for positioning at a position that is on or close to the right arm of said subject; and
 - an electrocardiological measuring apparatus that is in electrical communication with said first electrode, said second electrode, and said third electrode, wherein said electrocardiological measuring apparatus is capable of measuring both a first lead and a different second lead without user intervention.
2. The apparatus of claim 1 wherein said second electrode represents LL.
3. The apparatus of claim 2 wherein said electrocardiological measuring apparatus is configured to measure a V₄ or a V₅ lead from said third electrode (RA) and said first electrode, when said second electrode (LL) is ground.
4. The apparatus of claim 2 wherein said electrocardiological measuring apparatus is configured to measure lead II from said third electrode (RA) and said second electrode (LL) when said first electrode (V₄) is ground.
5. The method of claim 1 wherein said first lead is V₄ or V₅ and said second lead is lead II.
6. The apparatus of claim 1 wherein said second electrode represents V₅.

7. The apparatus of claim 6 wherein said electrocardiological measuring apparatus is configured to measure a V_4 lead from said third electrode (RA) and said first electrode (V_4) when said second electrode (V_5) is ground.
8. The apparatus of claim 6 wherein said electrocardiological measuring apparatus is configured to measure a V_5 lead from said third electrode (RA) and said second electrode (V_5) when said first electrode (V_4) is ground.
9. The apparatus of claim 1 wherein
said apparatus further consists of a fourth electrode disposed on said first non-conductive pad and adapted for electrical connection with the skin of the subject in order to receive and transmit electrical impulses,
said second electrode represents LL;
said fourth electrode represents V_5 ;
said second electrode is for positioning below said first electrode and said fourth electrode; and
said fourth electrode is in electrical communication with said electrocardiological measuring apparatus.
10. The apparatus of claim 9 wherein said electrocardiological measuring apparatus is configured to measure lead II from said third electrode (RA) and said second electrode (LL) when either said fourth electrode (V_5) or said first electrode (V_4) is ground.
11. The apparatus of claim 9 wherein said electrocardiological measuring apparatus is configured to measure a V_4 lead from said third electrode (RA) and said first electrode (V_4) when said fourth electrode (V_5) is ground.
12. The apparatus of claim 9 wherein said electrocardiological measuring apparatus is configured to measure a V_4 lead from said first electrode (V_4) and an aVL lead, where the aVL lead is taken from the third electrode (RA) and the second electrode (LL), when the fourth electrode (V_5) is ground.
13. The method of claim 9 wherein said first lead is V_4 or V_5 and said second lead is aVL.

14. The apparatus of claim 9 wherein said electrocardiological measuring apparatus is configured to measure a V_4 lead from said third electrode (RA) and said second electrode (LL) when said fourth electrode (V_5) is ground.

15. The apparatus of claim 9 wherein said electrocardiological measuring apparatus is configured to measure a V_5 lead from said third electrode (RA) and said fourth electrode (V_5) when said first electrode (V_4) is ground.

16. The apparatus of claim 9 wherein said electrocardiological measuring apparatus is configured to measure a V_5 lead from said fourth electrode (V_5) and an aVL signal, where the aVL signal is taken from the third electrode (RA) and the second electrode (LL), when the first electrode (V_4) is ground.

17. The apparatus of claim 1 wherein said apparatus further consists of a fourth electrode disposed on said first non-conductive pad and adapted for electrical connection with the skin in order to receive and transmit electrical impulses, wherein said second electrode represents V_5 and said fourth electrode represents V_6 and wherein said fourth electrode is in electrical communication with said electrocardiological measuring apparatus.

18. The apparatus of claim 17 wherein said electrocardiological measuring apparatus is configured to measure a V_4 lead from said third electrode (RA) and said first electrode (V_4) when said fourth electrode (V_6) or said second electrode (V_5) is ground.

19. The apparatus of claim 17 wherein said electrocardiological measuring apparatus is configured to measure a V_5 lead from said third electrode (RA) and said second electrode (V_5) when said fourth electrode (V_6) or said first electrode (V_4) is ground.

20. The apparatus of claim 17 wherein said electrocardiological measuring apparatus is configured to measure a V_6 lead from said third electrode (RA) and said fourth electrode (V_6) when said second electrode (V_5) or said first electrode (V_4) is ground.

21. The method of claim 17 wherein said first lead and said different second lead are each selected from the group consisting of V_4 , V_5 , and V_6 .

22. The apparatus of claim 1 wherein

said apparatus further consists of a fourth electrode and a fifth electrode disposed on said first non-conductive pad and adapted for electrical connection with the skin in order to receive and transmit electrical impulses;

said second electrode represents V_5 ;

said fourth electrode represents V_6 ;

said fifth electrode represents LL and is for positioning below said first, second, and fourth electrodes; and

said fourth and said fifth electrodes are in electrical communication with said electrocardiological measuring apparatus

23. The apparatus of claim 22 wherein said electrocardiological measuring apparatus is configured to measure lead II from said third electrode (RA) and said fifth electrode (LL) when said first electrode (V_4), said second electrode (V_5), or said fourth electrode (V_6) is ground.

24. The apparatus of claim 22 wherein said electrocardiological measuring apparatus is configured to measure a V_4 lead from said third electrode (RA) and said first electrode (V_4) when said fourth electrode (V_6) or said second electrode (V_5) is ground.

25. The apparatus of claim 22 wherein said electrocardiological measuring apparatus is configured to measure a V_4 lead from first electrode (V_4) and an aVL lead, where the aVL lead is taken from the third electrode (RA) and the fifth electrode (LL), when said second electrode (V_5) or said fourth electrode (V_6) is ground.

26. The apparatus of claim 22 wherein said electrocardiological measuring apparatus is configured to measure a V_5 lead from said third electrode (RA) and said second electrode (V_5) when said fourth electrode (V_6) is ground.

27. The apparatus of claim 22 wherein said electrocardiological measuring apparatus is configured to measure a V_5 lead from said second electrode (V_5) and an aVL lead, where the aVL lead is taken from the third electrode (RA) and the fifth electrode (LL), when said fourth electrode (V_6) or said first electrode (V_4) is ground.

28. The apparatus of claim 22 wherein said electrocardiological measuring apparatus is configured to measure a V_6 lead from said third electrode (RA) and said fourth electrode (V_6) when said second electrode (V_5) is ground.

29. The apparatus of claim 22 wherein said electrocardiological measuring apparatus is configured to measure a V_6 lead from said fourth electrode (V_6) and an aVL lead, where the aVL lead is taken from the third electrode (RA) and the fifth electrode (LL), when said second electrode (V_5) or said first electrode (V_4) is ground.

30. The apparatus of claim 1 wherein said first electrode represents V_4 or V_5 and is for positioning on V_4 or V_5 of said subject and wherein said second electrode represents LL.

31. The connector device of claim 1, wherein said first non-conductive pad and said second non-conductive pad are selected from non-conductive natural or synthetic material.

32. A method of identifying asymptomatic coronary heart disease (CHD) for a subject, the method comprising:

(A) obtaining an electrocardiogram measurement from said subject using a remote device consisting of, in combination:

a first non-conductive pad;

a first electrode and a second electrode disposed on said first non-conductive pad and adapted for electrical connection with the skin in order to receive and transmit electrical impulses, wherein said first electrode represents any one of V_4 , V_5 , or V_6 and the second electrode is either (i) positioned on the subject below the first electrode in order to represent left leg (LL) or (ii) is placed on a line on the subject defined by the V_4 , V_5 , and V_6 precordial positions in order to represent any one of V_4 , V_5 , or V_6 not represented by the first electrode; and

a second non-conductive pad;

a third electrode disposed on said second non-conductive pad and adapted for electrical connection with the skin in order to receive and transmit electrical impulses, wherein said third electrode is a right arm (RA) electrode that is for positioning on or close to the right arm of said subject; and

an electrocardiological measuring apparatus that is in electrical communication with said first electrode, said second electrode, and said third electrode, wherein said

electrocardiological measuring apparatus is capable of measuring both a first lead and a different second lead without user intervention; and

(B) analyzing said electrocardiogram measurement.

33. The method of claim 32, the method further comprising collecting potential risk factor information from said subject through manual or electronic interrogation means.

34. The method of claim 33 wherein the potential risk factor information is collected in the form of a questionnaire.

35. The method of claim 32, the method further comprising obtaining any one or more of results of a diagnostic test for said subject.

36. The method of claim 32, the method further comprising obtaining personal record information for said subject.

37. The method of claim 36 wherein said personal record information comprises any one or more of a name, an address, a telephone number, an age, an ethnicity, and an e-mail address.

38. The method of claim 32 wherein said analyzing said electrocardiogram measurement comprises:

performing an ECG analysis; and

performing decision modeling based on said ECG analysis.

39. The method of claim 38 wherein said performing ECG analysis determines ECG findings, wherein said ECG findings are an identification of no abnormal ECG finding or an identification of one or more abnormal ECG findings.

40. The method of claim 39 wherein said decision modeling determines a pre-screening identification for said subject based on a function of said ECG findings.

41. The method of claim 40 wherein said pre-screening identification is further determined by considering a risk factor.

42. The method of claim 41 wherein said risk factor is at least one of an advanced age of the subject, the blood pressure of the subject, the cholesterol level of the subject, the results from a test for diabetes of the subject, the sex of the subject, whether the subject smokes, an assessment of the physical activity of the subject, the weight of the subject, the diet of the subject and the ethnicity of the subject.

43. The method of claim 32, the method further comprising providing a report of said electrocardiogram measurement using a web site.

44. The method of claim 43 wherein said web site is secured with a user identification and a password associated with said subject.

45. The method of claim 32 wherein said first electrode represents V_4 or V_5 and is for positioning on V_4 or V_5 of said subject and wherein said second electrode represents LL.

46. The method of claim 39 wherein said ECG findings are any one or more of silent myocardial infarction (SMI), silent ischemia, and inducible ischemia.

47. The method of claim 32 wherein said first lead is V_4 or V_5 and said second lead is lead II.

48. A computer system for identifying asymptomatic coronary heart disease (CHD) for a subject, the computer system comprising:

- a central processing unit;

- a memory, coupled to the central processing unit, the memory storing:

- (A) instructions for receiving data from a remote capture device; wherein said data is generated for a subject by a device consisting of, in combination:

- a first non-conductive pad;

- a first electrode and a second electrode disposed on said first non-conductive pad and adapted for electrical connection with the skin of the subject in order to receive and transmit electrical impulses, wherein said first electrode represents any one of V_4 , V_5 , or V_6 and the second electrode is either (i) positioned on the subject below the first electrode in order to represent left leg (LL) or (ii) is placed on a line on the subject defined by the V_4 , V_5 , and V_6 precordial positions in order to represent any one of V_4 , V_5 , or V_6 not represented by the first electrode; and

a second non-conductive pad;

a third electrode disposed on said second non-conductive pad and adapted for electrical connection with the skin in order to receive and transmit electrical impulses, wherein said third electrode is a right arm (RA) electrode that is for positioning on or close to the right arm of said subject; and

an electrocardiological measuring apparatus that is in electrical communication with said first electrode, said second electrode, and said third electrode, wherein said electrocardiological measuring apparatus is capable of measuring both a first lead and a different second lead without user intervention; and

(B) instructions for analyzing said data.

49. The computer system of claim 48, wherein said instructions for receiving further comprise instructions for receiving risk factor information and said instructions for analyzing further comprise instructions for analyzing said risk factor information.

50. The computer system of claim 48 wherein said data comprises ECG data.

51. The computer system of claim 50 wherein said ECG data is digitized.

52. The computer system claim of 48 wherein said data further includes risk factor information in the form of one or more of advanced age, cigarette smoking, hypertension, obesity, diabetic condition, high cholesterol, diet, family history, ethnicity, and sex for said subject

53. The computer system of claim 48 wherein said data further comprises any one or more of results of a diagnostic test for said subject.

54. The computer system of claim 48 wherein said data further comprises personal record information for said subject.

55. The computer system of claim 54 wherein said personal record information comprises any one or more of a name, an address, a telephone number, an age, or an e-mail address for said subject.

56. The computer system claim 54 wherein said personal record information comprises any one or more of risk factor information in the form of advanced age, cigarette smoking, hypertension, obesity, diabetic condition, high cholesterol, diet, family history, ethnicity, and sex for said subject.

57. The computer system of claim 48 wherein said data is encrypted.

58. The computer system of claim 48 wherein said instructions for analyzing comprise:
instructions for performing ECG analysis; and
instructions for performing decision modeling.

59. The computer system of claim 58 wherein said instructions for performing ECG analysis determines ECG findings, wherein said ECG findings are an identification of no abnormal ECG findings or an identification of one or more abnormal ECG findings for said subject.

60. The computer system of claim 59 wherein said instructions for performing decision modeling determine a pre-screening identification for said subject based on a function of said ECG findings.

61. The computer system of claim 60 wherein said pre-screening identification is further determined by considering a risk factor for said subject.

62. The computer system of claim 61 wherein said risk factor is at least one of an advanced age of the subject, a blood pressure of the subject, a cholesterol level of the subject, the results from a test for diabetes for said subject, the sex of the subject, whether the subject smokes, an assessment of the physical activity of the subject, the weight of the subject, the diet of the subject, and the ethnicity of the subject.

63. The computer system of claim 48 wherein said memory further comprises a web site module, the web site module comprising instructions for providing a web site that includes a report of said data.

64. The computer system of claim 63 wherein said memory further comprises instructions for securing said web site with a user identification and a password associated with said subject.

65. The computer system of claim 48 the memory further comprising a database having a member record for each subject in a plurality of subjects, each member record comprising:

a member identifier for the subject corresponding to said member record;

a personal record for the subject corresponding to said member record wherein said personal record was obtained by said instructions for receiving data;

and

ECG data for the subject corresponding to said member record wherein said ECG data was obtained by said instructions for receiving data;

66. The computer system of claim 65 wherein a personal record in said database further comprises risk factor information for the subject associated with the personal record in the form of a blood pressure of the subject, a cholesterol level of the subject, the results from a test for diabetes for the subject, the sex of the subject, whether the subject smokes, an assessment of the physical activity of the subject, the weight of the subject, the diet of the subject, and the ethnicity of the subject..

67. The computer system of claim 66 wherein said personal record further comprises any one or more of a name, an address, a telephone number, an age, or an e-mail address for the subject corresponding to said member record.

68. The computer system of claim 66 wherein said personal record further comprises a pre-screening identification for said subject corresponding to said personal record.

69. The computer system of claim 66 wherein a personal record in said database further comprises a risk factor for the subject associated with said personal record, wherein said risk factor comprises at least one of an advanced age of the subject, the blood pressure of the subject, the cholesterol level of the subject, the results from a test for diabetes, the sex of the subject, whether the subject smokes, an assessment of the physical activity of the subject, the weight of the subject, the diet of the subject, and the ethnicity of the subject.

70. The computer system of claim 48 wherein said first electrode represents V_4 or V_5 and is for positioning on V_4 or V_5 of said subject and wherein said second electrode represents LL.

71. The computer system of claim 59 wherein said ECG findings is any one or more of abnormal findings, or evidence of silent myocardial infarction (SMI), silent ischemia, or inducible ischemia..

72. A database having a member record for each subject in a plurality of subjects, each member record comprising

- a member identifier for the subject corresponding to said member record;

- a personal record for the subject corresponding to said member record;

- ECG data for the subject corresponding to said member record wherein said ECG data is obtained by a remote capture device consisting of, in combination:

 - a first non-conductive pad;

 - a first electrode and a second electrode disposed on said first non-conductive pad and adapted for electrical connection with the skin of said subject in order to receive and transmit electrical impulses, wherein said first electrode represents any one of V_4 , V_5 , or V_6 and the second electrode is either (i) positioned on the subject below the first electrode in order to represent left leg (LL) or (ii) is placed on a line on the subject defined by the V_4 , V_5 , and V_6 precordial positions in order to represent any one of V_4 , V_5 , or V_6 not represented by the first electrode;

 - a second non-conductive pad;

 - a third electrode disposed on said second non-conductive pad and adapted for electrical connection with the skin in order to receive and transmit electrical impulses, wherein said third electrode is a right arm (RA) electrode that is for positioning on or close to the right arm of the subject; and

 - an electrocardiological measuring apparatus that is in electrical communication with said first electrode, said second electrode, and said third electrode, wherein said electrocardiological measuring apparatus is capable of measuring both a first lead and a different second lead without user intervention.

73. The database of claim 72 wherein a personal record in said database comprises the results of a diagnostic tests for the subject associated with said member record.

74. The database of claim 72 wherein a personal record in said database comprises any one or more of a name, an address, a telephone number, an age, or an e-mail address for the subject corresponding to said member record.

75. The database of claim 72 wherein a personal record in said database comprises a pre-screening identification for said subject corresponding to said member record, wherein a value of said pre-screening identification is based on an analysis of said ECG data.

76. The database of claim 72 wherein a personal record in said database further comprises risk factor information for the subject associated with said member record, wherein said risk factor information comprises at least one of an advanced age of said subject, a blood pressure of said subject, a cholesterol level of said subject, the results from a test for diabetes for said subject, a sex of said subject, or the ethnicity of said subject.

77. The database of claim 72 wherein said first electrode represents V₄ or V₅ and is for positioning on V₄ or V₅ of a subject and wherein said second electrode represents LL.

78. A method of identifying asymptomatic coronary heart disease (CHD) for a subject, the method comprising:

(A) collecting risk factor information from said subject;

(B) obtaining an electrocardiogram measurement from said subject using a remote device consisting of, in combination:

a first non-conductive pad;

a first electrode and a second electrode disposed on said first non-conductive pad and adapted for electrical connection with the skin in order to receive and transmit electrical impulses, wherein said first electrode represents any one of V₄, V₅, or V₆ and the second electrode is either (i) positioned on the subject below the first electrode in order to represent left leg (LL) or (ii) is placed on a line on the subject defined by the V₄, V₅, and V₆ precordial positions in order to represent any one of V₄, V₅, or V₆ not represented by the first electrode; and

a second non-conductive pad;

a third electrode disposed on said second non-conductive pad and adapted for electrical connection with the skin in order to receive and transmit electrical impulses, wherein said third electrode is a right arm (RA) electrode that is for positioning on or close to the right arm of said subject; and

an electrocardiological measuring apparatus that is in electrical communication with said first electrode, said second electrode, and said third electrode, wherein said electrocardiological measuring apparatus is capable of measuring both a first lead and a different second lead without user intervention; and

(C) analyzing said collected risk factor information and said electrocardiogram measurement.

79. The method of claim 78 wherein said risk factor information is collected from said subject in the form of a questionnaire.

80. The method of claim 78 wherein said analyzing comprises:

performing an ECG analysis of said electrocardiogram measurement; and
performing decision modeling based on said ECG analysis.

81. The method of claim 80 wherein said decision modeling determines a pre-screening identification for said subject based on a function of said ECG analysis.

82. The method of claim 81 wherein said pre-screening identification is further determined by considering said collected risk factor information.

83. The method of claim 82 wherein said risk factor information comprises at least one of an advanced age of the subject, the blood pressure of the subject, the cholesterol level of the subject, the results from a test for diabetes of the subject, the sex of the subject, whether the subject smokes, an assessment of the physical activity of the subject, the weight of the subject, the diet of the subject and the ethnicity of the subject.

84. A computer system for identifying a risk factor for a subject, the computer system comprising:

a central processing unit;

a memory, coupled to the central processing unit, the memory storing:

(A) instructions for receiving data from a remote capture device; wherein said data comprises risk factor information and ECG data for said subject;

(B) instructions for analyzing said data for said risk factor; and

(C) instructions for storage of said data and a result of said instructions for analyzing; wherein said ECG data is measured by a device consisting of, in combination:

a first non-conductive pad;

a first electrode and a second electrode disposed on said first non-conductive pad and adapted for electrical connection with the skin of the subject in order to receive and transmit electrical impulses, wherein said first electrode represents any one of V_4 , V_5 , or V_6 and the second electrode is either (i) positioned on the subject below the first electrode in order to represent left leg (LL) or (ii) is placed on a line on the subject defined by the V_4 , V_5 , and V_6 precordial positions in order to represent any one of V_4 , V_5 , or V_6 not represented by the first electrode; and

a second non-conductive pad;

a third electrode disposed on said second non-conductive pad and adapted for electrical connection with the skin in order to receive and transmit electrical impulses, wherein said third electrode is a right arm (RA) electrode that is for positioning on or close to the right arm of said subject; and

an electrocardiological measuring apparatus that is in electrical communication with said first electrode, said second electrode, and said third electrode, wherein said electrocardiological measuring apparatus is capable of measuring both a first lead and a different second lead without user intervention.